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Vol. 38 No. 7

BULLETIN

OF THE

TORREY BOTANICAL CLUB

AUGUST, 1911

Notes on Rosaceae—VI

PER AXEL RYDBERG

ARGENTINA

In an article in Rhodora for January 1909, Prof. M. L. Fernald discussed "The Representatives of *Potentilla Anserina* in Eastern America." The second paragraph of his article reads as follows: "In November, 1908, two extensive monographs of *Potentilla* appeared, but when one turns to these two treatments with the hope of settling his long-standing problems the results are certainly disheartening." And then, "after spending *some days** in the study of the material in the *Gray Herbarium* and the Herbarium of the *New England Botanical Club*," he solves the problems. Fifteen years have now passed since I began my work on *Potentilla* and Dr. Th. Wolf has devoted longer time than that to the study, and neither of us has definitely settled the status of the different forms of this group. When the manuscript of my monograph in the North American Flora went to press I had seen not only the collection in the Gray Herbarium but also those of the New York Botanical Garden, Columbia University, United States National Herbarium, Philadelphia Academy, and the College of Pharmacy, New York. When preparing my original monograph, printed in 1898, I had also seen the collection of the Missouri Botanical Garden. Besides, many of the critical species had been sent to me for determination by the University of California, Mr. T. S. Brandegee, Mr. Parish, and many others.

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* Italics are mine.

[The BULLETIN for July 1911 (**38**: 307–350. *pl. 13–15*) was issued 27 Jl 1911.]

In the Gray's New Manual, published September 18, 1908, the authors, Robinson and Fernald, stated under *Potentilla Anserina* as follows: "Var. *grandis* T. & G. is merely a luxuriant state in rich meadows." It is strange that so shortly after, in January, 1909, Professor Fernald should admit this variety as a good species. The difference in the achenes, pointed out by me, evidently persuaded him that it could not be kept in *Potentilla Anserina* L. (*Argentina Anserina* Rydb.). It would have been asking too much if one expected him to admit all at once the eight species recognized in my monograph. My intention is not to defend them as species. The limitation between species and variety will always be arbitrary, so also between variety and form. If Professor Fernald admitted *Argentina argentea* as a variety under the name *Potentilla Anserina* var. *sericea*, he should have admitted *A. occidentalis*, *A. litoralis*, and *A. subarctica* also as varieties. There are certain statements, also, in Fernald's article, to which I must take exception. As Professor Fernald has admitted *Argentina argentea* Rydb. as a variety I should feel content so far as this species is concerned, but I can not pass it altogether. The specimen in the Gray Herbarium from St. John Valley, referred to in Professor Fernald's paper is "in spite of its leaves being silvery on both sides," not *A. argentea.* I remember the specimen very well. Neither is *A. argentea* exactly the same as *Potentilla Anserina sericea* Hayne. Both have leaves silvery on both sides, but in the Rocky Mountain plant the leaflets as a rule are decidedly obovate, with comparatively few ovate teeth, while in the Eurpoean plant the leaflets are usually much longer, elliptic, and with numerous lanceolate teeth directed forward. I have not seen any specimens of *Argentina argentea* east of South Dakota. It needs therefore not to be considered in connection with the flora of eastern North America.

In discussing the species with nongrooved achenes, Professor Fernald criticizes my key, in which I separate *P. pacifica* and *P. occidentalis* from the rest by the petals being "usually over 1 cm. long rounded-obovate," while the others have petals "6–8 mm., rarely 1 cm. long, usually elliptic-obovate." It may be true that I have "never known the full beauty of its large flowers" [*A. litoralis*] and that the given characters do not hold. I did not see the specimens in the herbarium of the New England Botanical Club, although I saw all in the Gray Herbarium. I have never seen any one, however, with such broad rounded petals as are usual in *A. occidentalis*. The latter has usually also broader and more obovate leaflets. Even if *A. occidentalis* and *A. litoralis* should be one species or variety, as you please, and the characters assigned should be found inconstant, the name of the eastern plant should not be *Potentilla pacifica* Howell, for that species was based on *P. Anserina β grandis* T. & G. The type was collected by Scouler and a fair duplicate is in the Torrey Herbarium. If I have not known the eastern plant "in its full beauty," I doubt if Professor Fernald has seen *Potentilla pacifica* in its. At least he did not see it in the Gray Herbarium, for if I remember rightly there was but one fair specimen of it there, shortly before my manuscript went to press.

The first synonym given under *Potentilla pacifica* by Professor Fernald is *P. Anserina groenlandica* Tratt. The type of the latter, collected by Giesecke, I have not seen, but Trattinick's description points evidently to the form of *P. Egedii* Wormskj. with the leaves whitened beneath. Notwithstanding the fact that Dr. Wolf limits *P. Anserina Egedii* to the glabrous form the fact remains that in *Argentina Egedii* (Wormskj.) Rydb. the leaves are whitened beneath or not, even in the same plant. Evidently Dr. Wolf includes in his var. *groenlandica* also the arctic plant from Alaska, which I described as *A. subarctica*. This Professor Fernald reduced to a synonym of *Potentilla pacifica*. Placing the duplicate of the types of *Argentina pacifica*, collected by Scouler, and the type sheet of *A. subarctica* collected by Dr. A. Hollick side by side, few persons would regard them as the same species or at least not as the same variety. *P. subarctica* is characterized by its decidedly turbinate hypanthium and few achenes, characters found only in this species and *Argentina Babcockiana*. In all the others the hypanthium is almost flat. The petals are rarely over 8 mm. long, while in *A. pacifica* they are usually 12–15 mm. long. In the latter the leaves are almost erect while in the other species they are spreading, except when growing among tall grass.

Dr. Wolf's treatment in including all the forms belonging to this genus in but one species, even if he admits several varieties, is unsatisfactory. He even makes the very distinct *P. anserinoides* a variety of *Potentilla Anserina*. My treatment is not satisfactory to Professor Fernald and to several other North American botanists, being too radical; but Professor Fernald, who has tried a kind of compromise, will not be followed by all. There is no doubt but that he knows the New England species better than anyone else, but the name *Potentilla pacifica* Howell does not belong to the eastern plant, and *Argentina subarctica* is not a synonym of it. If he had treated them as varieties I would have been satisfied, for what he and many others call varieties, I call species.

Argentina Anserina (L.) Rydb. and *A. argentea* are represented by numerous specimens in our herbaria. The others are less well represented. In the herbaria of the New York Botanical Garden and Columbia University are found the following. The lists I had from the U. S. Nat. Herbarium and the Gray Herbarium I have mislaid and can not find.

ARGENTINA PACIFICA (Howell) Rydb.

OREGON: Beach, Nestucca, 1901, *Kirkwood 129;* locality not given, *Scouler.*

WASHINGTON: Chehalis County, 1897, *Lamb 1080.*

BRITISH COLUMBIA: Vancouver Island, *Boas.*

ARGENTINA OCCIDENTALIS Rydb.

CALIFORNIA: Suisun, Solano County, June 6, 1903, *Baker 3217;* Albion, Mendocino County, May 1903, *McMurphy 263;* Mendocino County, May 1898, *H. E. Brown 723;* San Mateo County, May 1877, *H. Edwards;* Pacific Grove, April 1903, *Heller 6632;* Lake Merced, San Mateo County, April 1907, *Heller 8441;* Colima, March 1877, *H. Edwards.*

OREGON: Netarts Bay, June 1894, *F. E. Lloyd.*

WASHINGTON: Granville, July 1902, *Conard 349;* Clallam County, June 1900, *Elmer 2525;* Olga, July 8, 1905, *Engberg.*

BRITISH COLUMBIA: Chase River, Vancouver Island, May 1887, *J. Macoun;* Renfrew, 1901, *Rosendahl & Brand 5;* Queen Charlotte Island, 1901, *Boas 28.*

ALASKA: Yes Bay, June 30, 1895, *Gorman 61½*.

It has been collected also on Behring Island, 1891, *Grebritsky*.

ARGENTINA LITORALIS Rydb.

ST. PIERRE: July 14, 1900, *Arsène*.

NEWFOUNDLAND: Channel, July 27, 1901, *Howe & Lang 785;* Barred Island, 1903, *Sornborger;* Placentia, 1894, *Robinson & Schrenk 42*.

LABRADOR: 1894, *Waghorne;* Nain, 1897, *Sornborger 27*.

NOVA SCOTIA: Mabou, August 1906, *C. B. Robinson 247;* Yarmouth, June 1901, *Howe & Lang 1*.

QUEBEC: Seven Islands, August 1907, *C. B. Robinson 689;* Lake Témiscouata, 1887, *Northrop 117*.

MAINE: Gross Island, Maine Coast, 1893, *Harvey;* Seal Harbor, Aug. 20, 1891, *T. G. White*.

MASSACHUSETTS: West Tisbury, August 1895, *Burgess;* East Medford, June 1878, *Perkins;* Ipswich, *Oakes;* Ipswich, June 1874, *Morong*.

NEW HAMPSHIRE: Sumner Falls, Plainfield, July 1900, *Eggleston 1977*.

RHODE ISLAND: Warwick, *Olney*.

ARGENTINA BABCOCKIANA Rydb.

NEW YORK: Westminster Park, 1910, *Miss E. Babcock;* shores of Oneida Lake June 1896, *Mason*.

ARGENTINA SUBARCTICA Rydb.

NORTH WEST TERRITORY, CANADA: 1861–2, *Onion, Kennicott & Hardisty*.

BRITISH COLUMBIA: Macleod Lake, 1879, *Dawson 7221*.

YUKON: Fort Selkirk, July 18, 1899, *Tarleton 132;* Dawson, July 1899, *R. S. Williams*.

ALASKA: Yukon River near Palisades, July 14, 1903, *Hollick;* Yakutat Bay, 1892, *Funston 34*.

The following are referred here doubtfully:

IDAHO: Sand Point, Aug. 24, 1901, *Umbach 428;* Lake Pend d'Oreille, near Hope, 1892, *Sandberg, MacDougal & Heller 937*.

MONTANA: Midvale, June 1903, *Umbach 217*.

ARGENTINA EGEDII (Wormskj.) Rydb.

HUDSON BAY REGION: Cape Jones, 1899, *A. P. Low 63182.*

LABRADOR: Rama, 1899, *Stecker 368.*

GREENLAND: Disco, 1902, *M. P. Porsild 921;* Kuanersuit *1448;* Fiskernaeset, *Holboell.*

ICELAND: Mura, 1888, *C. Sprague Smith.*

COMARUM

As I have stated in a previous paper, Dr. Wolf erroneously referred *Comarum palustre* L. or *Potentilla palustris* Scop. to the section POTENTILLAE TRICHOCARPAE, subsection NEMATOSTYLAE, series SUFFRUTICULOSAE. The ovaries and carpels are perfectly glabrous and the stem is in no way shrubby, the only perennial part being the horizontal creeping rootstock. Furthermore Dr. Wolf has associated with it *Potentilla Salesoviana* Steph. This is a shrubby plant with hairy ovaries and carpels. The only character that would bring them together is the color of the petals, which are purple or rose colored. In every respect *P. Salesoviana* is more closely related to *Dasiphora* than to *Comarum.* It has the shrubby habit of *Dasiphora,* the pinnate leaves, the scarious, sheathing stipules, the flattened anthers, subcordate at the base and dehiscent on the margins, practically the same arrangement of the stamens, and the woolly achenes of that genus. The only characters in which it does not agree with *Dasiphora* are found in the styles and stigmas and the color of the petals. The style is filiform, not clubshaped, and the stigma acutish and obsolete, not expanded, and bluntly 4-lobed, and the color of the flowers is rose or whitish, not yellow. As the color has no value as a generic character, the characters of the style and stigma are the only characters that would keep it out of *Dasiphora.* It should be included in this genus or else be made a distinct genus. The position of the style is lateral in both *Dasiphora* and *Comarum.* *Potentilla Salesoviana* differs from *Comarum,* not only in the characters given above, viz., the shrubby habit and the hairy carpels, but also in the form of the anthers and arrangement of the stamens.

The form of *Comarum palustre* common in North America differs considerably from the typical form of northern Europe.

It is usually much taller and the leaflets are linear-oblong, 5–8 cm. long and only 1–2 cm. wide, obtuse or rounded at the apex and with lanceolate teeth. It was described as *Comarum angustifolium* by Rafinesque. In the European form the leaflets are elliptic or oval, mostly acute at both ends, with broad and ovate teeth. This is also the prevailing form in arctic and subarctic America, but the two forms grade in numerous ways into each other, and *C. angustifolium* can be regarded scarcely more than a variety. So also *C. tomentosum* Raf. (*Potentilla palustris villosa* Lehm.). All grades of pubescence occur from a dense and subvelutinous one to practically none.

DUCHESNEA

Dr. Wolf included *Duchesnea indica* (Andrews) Focke in *Potentilla* and associated it with *P. reptans*, *P. canadensis*, etc. With Dr. Wolf's broad view of genera this was very natural, but I can not see how he could keep out *Sibbaldia* and even *Fragaria* from his *Potentilla.* All three have lateral styles, and *Sibbaldia* is even habitually as close to the typical *Potentillae* as *Duchesnea* is.

FRAGARIA

It is exceedingly hard to draw specific lines in this genus. It is easy to distinguish *F. vesca* or *F. americana* from *F. virginiana* or *F. grandiflora*, for in the former two the achenes are wholly superficial, while in the latter two they are set in deep pits in the fleshy receptacle, but such species as *F. californica* and *F. mexicana* connect the two groups, the achenes being in very shallow pits.

A twelve years' study of the genus since the publication of my Monograph of the North American Potentilleae, had not changed my views, and the recognized species remained practically the same in my new revision in the North American Flora, only that three new species were described, two varieties given specific rank, and *F. multicipita* Fernald and the introduced *F. grandiflora* Ehrh. added. The treatment in my monograph was not followed either by the authors of the Gray's New Manual or by those of the New Manual of the Central Rocky Mountains; and I scarcely expected that it would. The former admits only two species and two varieties as growing in the northeastern United States, while my monograph admitted five species and one variety, and my treatment in the North American Flora admits seven species. *Fragaria canadensis* and *F. Terrae-novae* are both reduced to forms of *F. virginiana*. Concerning *F. canadensis* the following remarks are found: "A form with the pubescence generally more sparing, the hairs on the scape being subappressed, is sometimes distinguished. (*F. canadensis* Michx., in part.)" The first one who in later years took up the name *F. canadensis* Michx. was Dr. N. L. Britton. He was followed by myself. I do not know of anybody else who in print has "distinguished" *F. canadensis* from *F. virginiana*, i. e., pointed out the differences between the two. The plant characterized by us is not a plant with appressed or subappressed pubescence on the scape but one with spreading pubescence. The distinguishing characters given by us are the oblong-conic fruit and the narrower leaflets with shorter petiolules. It is a rare plant and could be a hybrid between *F. virginiana* and *F. americana*, but the well-developed fruit, which is even longer and narrower than in *F. americana*, speaks against it. Besides, Professor Fernald has collected in the lower part of Quebec an entirely different plant, which looks much more like a hybrid between those two species. This plant is intermediate between the two but more like *F. americana* and is apparently sterile, a fact that speaks for a hybrid origin. In the Gray's New Manual the following remark is also found: "Another scarcely separable form has the hairs on both scapes and petioles sparse and subappressed. (*F. terrae-novae* Rydb.)" These characters are true but they are not the only ones. *F. Terrae-novae* has the large flowers of the western *F. platypetala*, the petals being almost twice the length of the sepals, while in *F. virginiana* they are usually about half longer than the sepals. *F. Terrae-novae* is about as distinct from *F. virginiana* as is Fernald's own *F. multicipita*. The difference between *F. Terrae-novae* and *F. multicipita* is that in the former the leaflets are short-petioluled while in the latter they are sessile. The petals of *F. multicipita* are unknown. *F. Grayana* and *F. americana* are regarded as varieties of *F. virginiana* and *F. vesca* respectively. So they were regarded by Dr. S. Watson.

The treatment in the New Manual of the Central Rocky Mountains is rather less satisfactory. *Fragaria bracteata* Heller is made a synonym of *F. americana*. The two resemble each other much in habit, but in the former the sepals in fruit are ascending or merely spreading, while in the latter they are reflexed as in the European *F. vesca*. It would have been better to reduce *F. americana* to a synonym of *F. vesca*. *Fragaria prolifica*, *F. pumila*, and *F. firma* are given as synonyms under *F. ovalis*. *F. firma* is a pure synonym, for when I described it I had no idea that the strawberry collected by Fendler under the number 206 was the type of *Potentilla ovalis* Lehm. Neither *F. prolifica* nor *F. pumila* are glaucous, but bright green. Professor A. Nelson has placed *F. ovalis*, and consequently also these two species in his division "Leaves somewhat glaucous, pubescence of scape and petioles appressed." He placed *F. platypetala* in the division "Leaves not glaucous; pubescence of the scape spreading or reflexed," although that species usually is decidedly glaucous. *F. glauca* is made a variety of *F. ovalis* although its leaves are by no means "thick." Watson's type has thinner leaves than the type of *F. pauciflora* Rydb., which is regarded as distinct. If *F. glauca* had been made a variety of *F. pauciflora* or vice versa, I would not have made any criticism.

The new species proposed in the North American Flora are *Fragaria insularis*, *F. Suksdorfii*, and *F. yukonensis*. *F. insularis* was based on material from Jamaica, supposed to be *F. vesca* introduced, but the plant is much more glaucous and less hairy than the northern European plant, and the sepals in fruit are not reflexed but ascending or spreading. The plant may be an introduced one in Jamaica, but the same plant has been collected in the Azores and Madeira. It may be the same as the *F. vesca* reported from Spain, but of this I am uncertain as I have seen no Spanish material. Lowe in his flora of Madeira* mentions a wild strawberry with the sepals enclosing the fruit. This may have been *F. insularis*.

In our herbaria are found the following specimens of *F. insularis:*

JAMAICA: Bank, Hardware Gap, 1908, *N. L. Britton 1778* and *3324;* Cinchona ("Wild strawberry"), 1906, *Wm. Harris 9216;* vicinity of Cinchona, 1908, *Alexandrina Taylor 4230* (in part);

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* Man. Fl. Madeira 1: 246. 1868.

same locality, 1906, *N. L. Britton 139;* same locality, 1900, *W. N. Clute 228.*

AZORES: Fayal, 1894, *C. S. Brown 77.*

Fragaria Suksdorfii was based on material which I had referred previously to *F. cuneifolia*, but the broadly lanceolate sepals and the decidedly villous fruit distinguish it from that species. The following specimens belong here:

WASHINGTON: Falcon Valley, June 2 and 28, 1883, *Suksdorf 486.*

OREGON: *Wilkes Expedition 440.*

BRITISH COLUMBIA: Meyers Creek, May 5, 1905, *Spreadborough 69948*, is referred here with some doubt, as there is no fruit.

Fragaria yukonensis was described from material originally determined as *F. chiloensis* or *F. glauca*. The type and some other specimens were referred to *F. chiloensis* on account of the thick subcoriaceous leaflets, but the latter lack the fine tomentum mixed with the longer hairs on the lower surface, characteristic of those of *F. chiloensis*. *F. yukonensis* could not be referred to *F. glauca* on account of its thick leaves. In fact it is more closely related to the southern *F. ovalis* which it resembles very closely. It differs, however, in the distinctly petiolulate instead of subsessile leaflets and in the longer bractlets. Besides, *F. yukonensis* is not known outside of the Yukon Territory, and *F. ovalis* not north of Wyoming. The following specimens belong to the former:

YUKON TERRITORY: Lake Lebarge, June 19, 1899, *Tarleton 38;* Rapid City, Aug. 20, 1899, *R. S. Williams;* Ranch Creek, June 8, 1899, *Gorman 1009;* Fifty Miles River, 1899, *A. L. Bolton.*

Fragaria Grayana Vilmorin was restored to specific rank in the North American Flora. It was first described as *F. virginiana illinoensis* A. Gray, under which name it has been best known. It was recognized before Dr. Gray described it, by Price, who recorded it as *F. illinoensis* but gave no description. I have found no specimens in the herbaria from any place east of Indiana and Alabama, although the type was said to have come from western New York. All specimens so named from the eastern states belonged to either *F. virginiana* or *F. grandiflora*, which latter is an escape from cultivation.

Fragaria grandiflora Ehrh., the "pine strawberry," is a native of South America. It is often hard to distinguish it from *F. Grayana*, but the petals are larger, usually over 1 cm. long, the sepals ovate or ovate-lanceolate, the achenes set in shallower pits, and the leaflets thicker. It often resembles closely *F. chiloensis* but lacks the characteristic tomentum of the lower surface of the leaflets. In cultivation are found many crosses between this species and *F. chiloensis* and *F. virginiana*. In the New York Botanical Garden herbarium there are the following specimens of *F. grandiflora*, which were collected far away from dwellings and which were well established at the localities:

NEW YORK: Roadside in woods between Twin Lakes and Mountain Lodge, Adirondack Mountains, July 4, 1906, *Rydberg 7842*.

BRITISH COLUMBIA: Trail, May 19 and June 13, 1902, *J. M. Macoun 63776* and *63777*.

KENTUCKY: Vicinity of Mammoth Cave, May 1899, *Dr. E. Palmer*.

At the same station where the writer collected *F. grandiflora*, he found also the white-fruited *F. vesca*, and the ordinary *F. virginiana*, with a white-fruited form of the latter. The white-fruited *F. vesca* is not uncommon in certain localities from northern New York and Connecticut to West Virginia and eastern Ohio. It is most common in the mountains of Pennsylvania. It is strange that this form should be common and apparently native in a region where the typical *F. vesca* is very rare and is found apparently only as an escape from cultivation. It is questionable if it should not be regarded as a native geographical species even if it originally mutated from *F. vesca*. It is not a form of the native *F. americana*.

The white-fruited form of *F. virginiana* collected in the Adirondacks by the writer and mentioned above, is very interesting. As the white-fruited *F. vesca* and the ordinary red-fruited *F. virginiana* were common along the road and growing together, these white-fruited specimens of *F. virginiana* might be hybrids between the two. They were typical *F. virginiana*, however, in every respect, even to the pitted fruit, except that the latter was white.

SIBBALDIA, SIBBALDIOPSIS, AND DASIPHORA

No essential change has been made in the treatment of these genera since the publication of my monograph of 1898.

DRYMOCALLIS

This genus is exceedingly perplexing as to its numerous and somewhat intergrading forms. It is by no means easy to draw specific lines. As represented in the eastern United States it is easily disposed of, as it is there represented by only one species, *D. agrimonioides* (*Potentilla arguta* Pursh). In the Rocky Mountain region there are at least nine forms which I have regarded as species, and these increase to about two dozen in the Pacific States. In the North American Flora there were admitted in all 28 species. Of these the following were proposed as new: *Drymocallis corymbosa*, *D. foliosa*, *D. pumila*, *D. viscosa*, *D. arizonica*, *D. amplifolia*, *D. oregana*, *D. laxiflora*, *D. albida*, and *D. micropetala*. Besides these, *D. glandulosa monticola* and *D. glandulosa incisa* were raised to specific rank and the name *D. agrimonioides* (Pursh) Rydb. was substituted for *D. arguta* (Pursh) Rydb., as *Geum agrimonioides* both has page priority and was based on the typical form.

Drymocallis corymbosa was described from specimens included in *D. convallaria* in my Flora of Montana. It differs from the original *D. convallaria* in the flat-topped instead of racemiform cyme, the rounded-obovate instead of rhombic-obovate leaflets, and the conspicuously long-hairy stem and petioles.

It is common from Alberta to Colorado, Idaho, Washington, and British Columbia.

Drymocallis foliosa was described from specimens which I had formerly determined doubtfully as *D. glutinosa* Rydb., i. e., *D. valida* (Greene) Piper. It is characterized by its large-leaved inflorescence and its rhombic-obovate coarsely and incisedly toothed leaflets. The following specimens belong to it:

MONTANA: Bridger Mountains, 1896, *Flodman 596.*

WYOMING: Buffalo Fork, 1897, *Tweedy 214;* Encampment, 1901, *Tweedy 4148.*

UTAH: Alta Mountains, 1899, *M. E. Jones 1108.*

Drymocallis pumila was based on some specimens included in *D. rhomboidea* in my monograph of 1898, and some material received later. Although it resembles *D. rhomboidea* in habit, it differs, however, in one essential character, viz., in the styles, which are decidedly fusiform. In *D. rhomboidea* as well as in *D. glabrata* the styles are filiform. Dr. Wolf remarks under *Potentilla rhomboidea* that he has found in "typical and fine specimens" of this species collected by Suksdorf (*no. 742*) the styles to be fusiform. This number of Suksdorf's, as seen below, belongs to *D. pumila* instead. The large flowers would place it near *D. fissa*, but it is a much more delicate plant, the stem leaves are much reduced and the bractlets are elliptic or oval instead of lanceolate or linear. The following specimens belong here:

OREGON: Stein's Mountains, 1901, *Cusick 2571;* same locality, 1901, *Griffiths & Morris 576*, and 1896, *J. B. Leiberg 2508.*

WASHINGTON: Mount Paddo, 1885, *Suksdorf 742.*

NEVADA: Summit Lake, 1901, *Griffiths & Morris 311.*

UTAH: Marysvale, 1894, *M. E. Jones 5375n.*

Drymocallis viscosa resembles much *D. glandulosa* in habit, has the large petals of *D. valida* and *D. fissa* and the bractlets of *D. pumila*, but differs from all in the conspicuous viscidity of the plant. It is known from the type locality only.

Drymocallis arizonica Rydb. resembles closely *D. Hanseni* but differs in the short dense inflorescence and the longer bractlets. It might have been included in that species but it grows in an entirely different region. The following specimens belong to it:

ARIZONA: Mormon Lake, 1898, *MacDougal 64;* Bill Williams Mountains, 1883, *Rusby 137* and *594.*

UTAH: Near St. George, 1877, *Palmer 146.*

Drymocallis amplifolia connects the *D. glandulosa* group with that of *D. Wrangelliana.* It has the habit of the former and the small pale petals of the latter. It is characterized by its large rhombic terminal leaflets, which resemble somewhat those of *D. foliosa.* The latter has very large deep yellow petals. *D. amplifolia* is known from the type station only, from which several specimens have been seen.

Drymocallis oregana was based partly on material included in *D. Wrangelliana* in my monograph and partly on material studied later. The type was collected by Thomas Nuttall and labeled by him *Potentilla oregana*. This name is cited in Torrey and Gray's Flora as a synonym under *P. glandulosa*. It is, however, more closely related to *D. Wrangelliana*, having the same oval sepals, rounded and mucronulate at the apex, and the small petals of the species; but the pedicels are longer, those of the earlier flowers 1–2 cm. long, the infloresence less leafy, and the petals pure yellow instead of ochroleucous. The stem is also usually more conspicuously long-hairy. It is of more northern distribution, ranging from the Mackenzie and British Columbia to Idaho and Oregon, while *D. Wrangelliana* is confined to California. The following specimens belong here:

OREGON: Columbia River, *Nuttall;* near Wimer, 1893, *Hammond 114 A;* base of Mt. Hood, 1894,*F. E. Lloyd;* eastern Oregon, 1898, *Cusick 2159;* Juniper Springs, 1896, *Leiberg 2286.*

IDAHO: About Lewiston, May 27, 1896, *A. A. & E. Gertrude Heller 3130;* valley of Big Potlatch River, June 6, 1892, *Sandberg, MacDougal & Heller 316;* Moscow Mountains, May 30, 1900, *Abrams 663.*

WASHINGTON: Olympic Mountains, August 1895, *Piper 2000;* Wenatchee, May 25, 1899, *Whited 1095.*

BRITISH COLUMBIA: Between Kettle and Columbia rivers, July 19, 1902, *J. M. Macoun 34527, 63786,* and *63787;* Skagit Valley, June 23, 1905, *J. M. Macoun 69938;* Chilliwack Lake, 1901, *J. M. Macoun 34440.*

NORTH WEST TERRITORY: *Franklin.*

When preparing the manuscript of my monograph in 1896, I studied several specimens labeled *Potentilla reflexa* Greene. Thinking these specimens authentic I drew my description of *Drymocallis reflexa* (Greene) Rydb. mainly from these specimens. Among this material was *Coville & Funston 1355*, from which the illustration was made. Having the opportunity to see Dr. Greene's type while preparing the new revision for the North American Flora, I saw my mistake, and the plant described as *D. reflexa* in my monograph appears under the name *D. laxiflora* in the later work. In *D. laxiflora*, as well as in most species of the *D. Wrangelliana* group, the leaflets are rounded-obovate and the plant conspicuously viscid; while in Greene's specimens of *D. reflexa* the leaflets, especially the terminal ones, are rhombic-obovate and the plant scarcely at all viscid. *D. laxiflora* is more closely related to *D. viscida* Parish, but differs in the broader ovate or oval bractlets, the more elongated and slender branches of the inflorescence, and the simple-toothed leaflets.

The following specimens belong to *Drymocallis reflexa:*

CALIFORNIA: Little Green Valley, San Bernardino Mountains, 1904, *R. Hall 7;* Nevada Falls, Yosemite Valley, 1902, *Hall & Babcock 3430.*

For several years there have been in the herbaria of the New York Botanical Garden, of Columbia University, and of the United States National Museum, several specimens resembling in many respects *Drymocallis Wrangelliana* and *D. oregana,* but with minute whitish petals. They could not be included in any of the previously described species. They resemble most closely *D. viscida* Parish, but the petals are white or whitish, not yellow, the plant is less viscid and the bractlets narrower. Besides, *D. viscida* was known only from southern California, and the specimens referred to come from Washington and British Columbia. In the North American Flora these specimens were described under the name *D. albida.* To it belongs the following material:

WASHINGTON: Damp or shady places at Bingen, 1893, *Suksdorf 2209;* Clallam County, June 1900, *Elmer 2526.*

OREGON: Forest Grove, June 3, 1893, *F. E. Lloyd.*

BRITISH COLUMBIA: Chilliwack Valley, July 10, 1901, *J. M. Macoun 34412* and *34441.* Skagit Valley, June 1905, *J. M. Macoun 69939;* Mt. Finlayson, Vancouver Island, June 3, 1887, *John Macoun.*

While collecting in Utah in 1905, the writer discovered another species closely related to the preceding, but differing in the orbicular instead of obovate petals and in the shorter and broader sepals. It was described in the North American Flora under the name *Drymocallis micropetala.* The following specimens belong to it:

UTAH: City Creek Cañon, June 9 and 12, 1905, *Rydberg 6153;* same locality June 9, 1883, *Leonard 105;* Red Rock Cañon, June 11, 1905, *Rydberg 6074.*

When preparing the manuscript for my monograph in 1896, I had not seen any specimens that agreed with Dr. Greene's description of *Potentilla lactea.* As most of the characterization of this species, according to Dr. Greene's own statements, were drawn from a "flower painting," the species was to my mind very doubtful. I have since seen several species from central and southern California which agree very well with Dr. Greene's description. These specimens resemble much in habit my own *Drymocallis gracilis,* but the petals are much smaller, scarcely exceeding the sepals, the plant is smaller and less viscid, and the stem leaves usually reduced. To *Drymocallis lactea* belong:

CALIFORNIA: Meadows above Bear Valley, July 23, 1906, *H. M. Hall 7562;* San Bernardino Mountains, Aug. 1, 1906, *Hall 7613;* vicinity of Hog Ranch, Yosemite National Park, July 1902, *Hall & Babcock 3391;* Griffins, July 1902, *Elmer 3978;* San Jacinto Mountains, July 1901, *Hall 2355;* Sawtooth Peak, 1904, *Hall & Babcock 5686.*

Dr. Wolf's treatment of the species belonging to this genus is altogether unsatisfactory. Of course he includes them in the genus *Potentilla. Drymocallis pseudorupestris* is made a variety of the European *Potentilla rupestris, D. convallaria* is made a variety of *P. arguta; D. lactea* is only mentioned under *Potentilla rupestris americana; D. rhomboidea* and *D. cuneifolia* are admitted as species; the rest are all bunched under *Potentilla glandulosa. D. incisa* and *D. Hanseni* are regarded as mere forms of *P. glandulosa genuina. D. fissa* appears under the name *P. glandulosa fissa* Th. Wolf, and *D. ashlandica* is made a mere form of the same. *D. valida* becomes *P. glandulosa glutinosa* and *D. glabrata* is regarded as a form thereof. *D. Wrangelliana* and *D. reflexa* are also regarded as varieties of *Potentilla glandulosa.* This treatment is at variance with the way the plants have been treated in this country, not only by Dr. Greene and myself, who have done the most work on the genera of Potentilleae, but by more conservative botanists. Professor Aven Nelson* regards *D. convallaria, D. pseudorupestris, D. fissa,* and *D. glutinosa* (= *D. valida*) as good species. These were the only Rocky Mountain species known besides *D. agrimonioides* (= *D. arguta*) and *D. glandulosa* until my revision in the North American Flora. Howell[*] admits *Potentilla glutinosa*, *P. ciliata* (= *D. ashlandica*), *P. fissa*, *P. glandulosa*, *P. Wrangelliana*, *P. reflexa*, and *P. rhomboidea*. Piper[†] admits *Drymocallis rhomboidea*, *D. pseudorupestris*, *D. convallaria*, *D. valida*, *D. glandulosa*, *D. glabrata*, and *D. Wrangelliana*. Blankinship[‡], who belongs to the conservative school, admits *Potentilla fissa* and *P. rhomboidea* besides those found in my Flora of Montana, viz., *Drymocallis arguta*, *D. convallaria*, *D. pseudorupestris*, *D. glutinosa*, and *D. glandulosa*. Heller[§] admits all the species included in my monograph of 1896. Hall[||] admits *Potentilla lactea* and includes *Drymocallis viscida* Parish under the name *Potentilla glandulosa nevadensis*. Jepson,[¶] who is very "conservative," on the contrary admits but one species, viz., *Potentilla glandulosa*. The plant described by him, however, is not *P. glandulosa* Lindley, but *P. Wrangelliana*.

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* New Manual of Botany of the Central Rocky Mountains.

CHAMAERHODOS

The American species of this genus has been regarded as identical with the Siberian *Chamaerhodos erecta* (L.) Bunge. Nuttall, one of America's most acute botanists, was the first to see the difference between the American and the Asiatic plant, and named the former *Chamaerhodos erecta parviflora*. Pickering regarded it as a distinct species, but his name *C. Nuttallii* was not properly published before the appearance of my revision in the North American Flora. In Torrey and Gray's Flora it appears as a synonym. The American plant has usually smaller flowers, the branches of the flat-topped inflorescence are strongly ascending, the pedicels erect or nearly so, and even in fruit scarcely exceeding the flower in length, while in *C. erecta* they are ascending and much longer.

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[*] Flora of Northwest America.

[†] Flora of Washington.

[‡] Montana Agricultural College Studies, 1, part 1.

[‡] Catalogue of North American Plants, edition 2.

[||] Botanical Survey of San Jacinto Mountains.

[¶] Flora of Western Middle California.